

LBNE NuMI Muon Test Program

Introduction
Status of the Tests

G. Mills

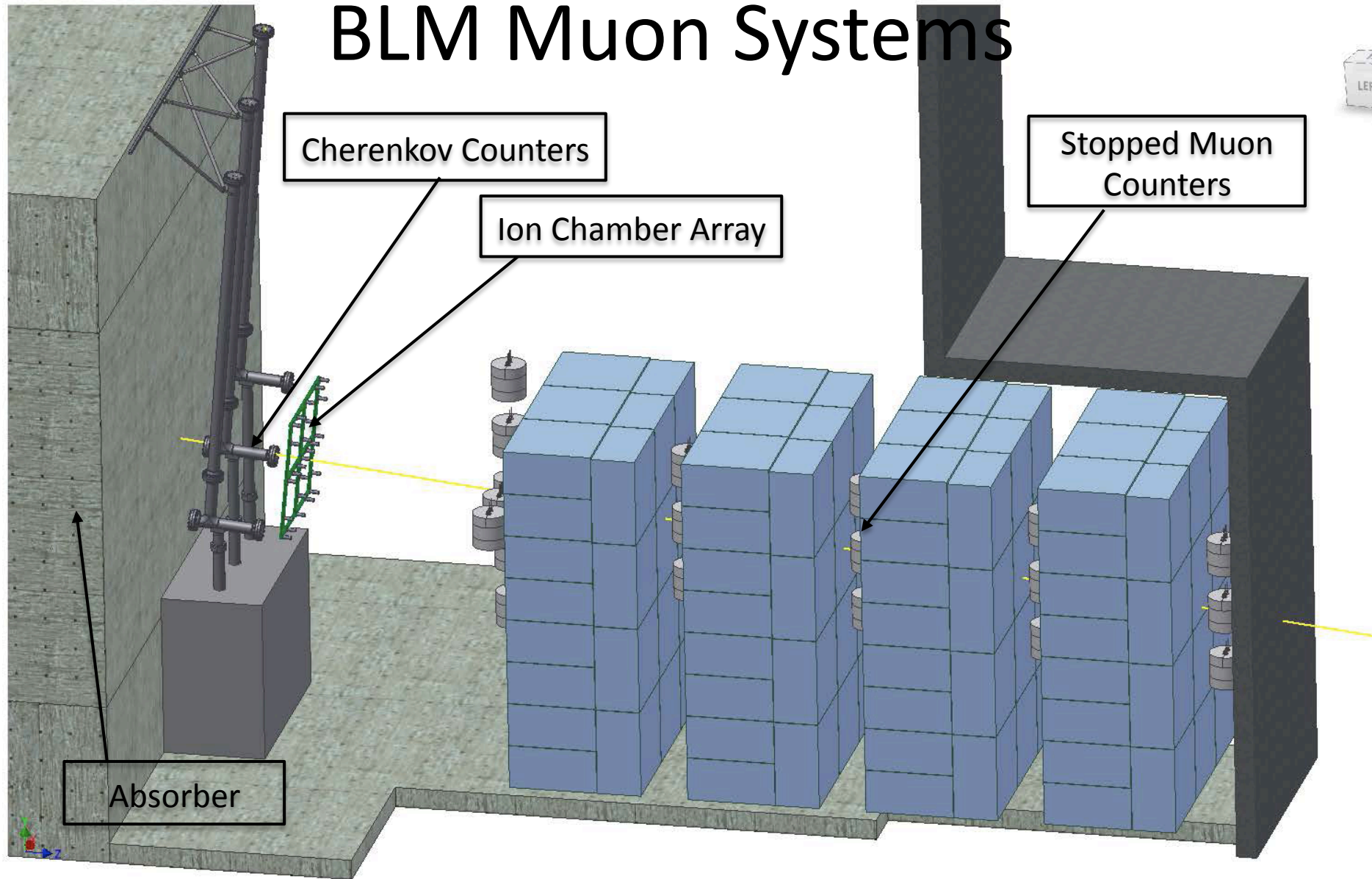
Current Collaboration

- University of Colorado
 - A. Marino and Eric Zimmerman (+ a number of students!)
- Drexel University
 - Chuck Lane (Drexel) (+ a number of students!)
- Los Alamos
 - Geoff Mills, Jan Boissevain + others

Beam Line Measurements

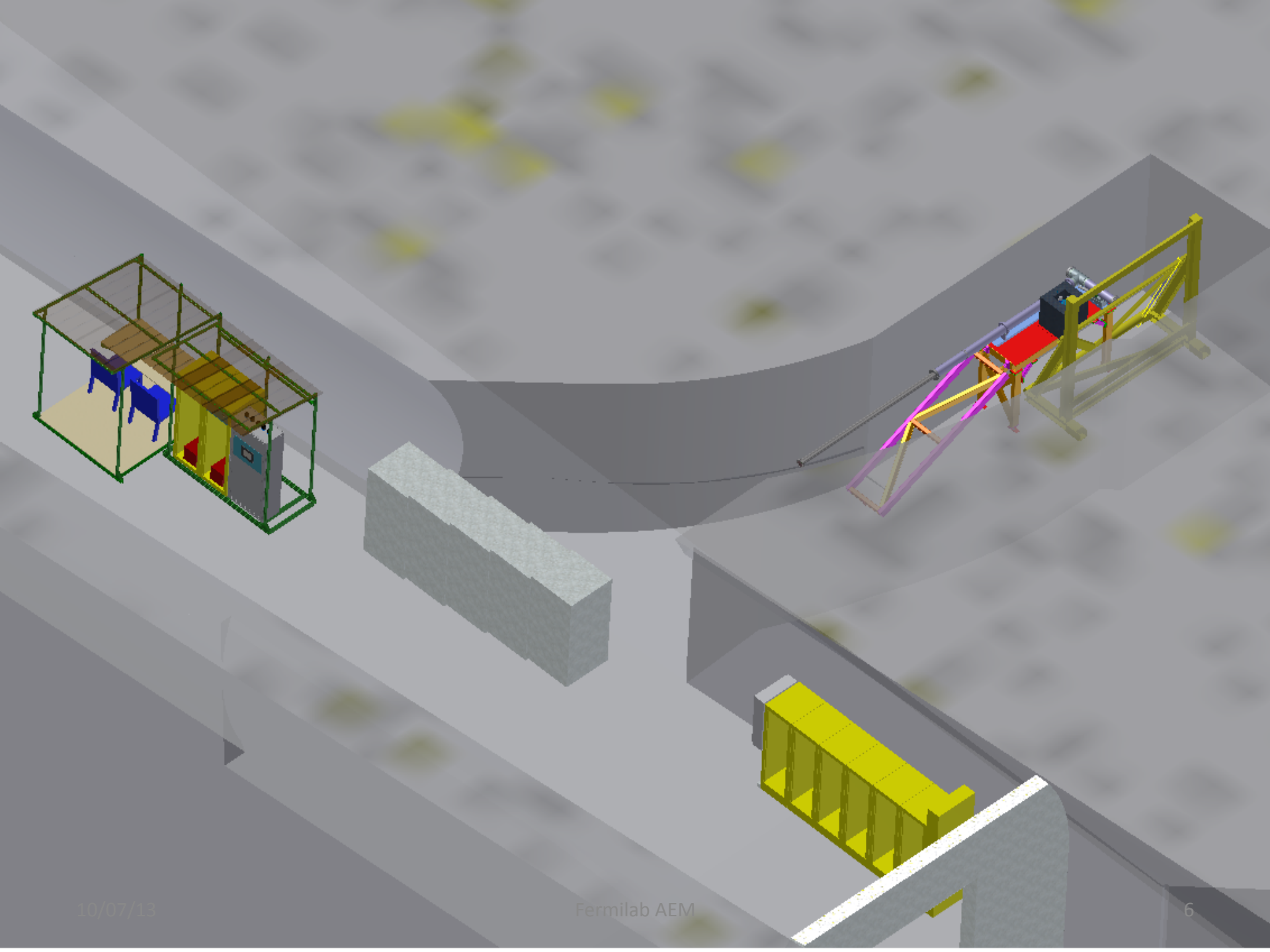
- Muon measurements after the absorber
 - Single particle environment
 - Muons are created in pion and kaon decays and bear directly on neutrino production
 - Rely only upon knowing muon energy loss and scattering in the absorber material
 - Complements other flux measurements:
 - external hadro-production measurements don't include horn and decay tunnel
 - ND neutrino measurements rely on knowing neutrino-nucleus cross sections

BLM Muon Systems



LBNE Prototype Tests at NuMI

- Opportunity to test those devices in NuMI beam during the Nova run
 - Planning started August 2012
 - Infrastructure put into place spring 2013
 - First detector prototypes in place August-September 2013



Alcove Test DAQ Station nearing completion



Present Status

- Rack infrastructure complete
- Detector stand complete
- Cables pulled into alcove 2
- Gas lines installed
- Temporary controls rack in place
- Cherenkov prototype and stopped muon prototype installed in NuMI alcove 2





10/07/13

Fermilab AEM

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Future Plans

- Operation of NuMI beam beginning
- Will collect data and understand performance over the next months
- Long term goal will be final design of muon systems and implementation in NuMI